REMARKS

Claims 1, 2, 4-11 and 21-26 are pending. Claim 1 is amended. Applicants respectfully request reconsideration and allowance of the claims based on the above amendment and following remarks.

The Office Action rejects claims 1, 2 and 4-11 under 35 U.S.C. §103(a) as being unpatentable over Suzuki (U.S. Patent No. 5,987,185) in view of Le (U.S. Patent No. 6,608,942) and claims 21-26 under 35 U.S.C. §103(a) as being unpatentable over Suzuki in view of Kawamura (U.S. Patent No. 5,251,267). These rejections are respectfully traversed.

For reasons of brevity, applicants arguments filed in the Response dated January 9, 2004 are hereby incorporated by reference.

As stated in the previous Response, Suzuki provides a system that relies upon density distribution in determining what areas to filter or not. Areas with small density changes such as speckled dots (62, 63) in Figs. 13 and 14 of Suzuki are filtered whereas the lines (61) are not filtered. This is described in column 7, lines 47-67. Lines 51-56 state that "if the same picture image data are processed with the conventional multiple value image filtering device, the noise 62 and 63 can be eliminated, but the top end part 64 of the chart 61 is rendered indistinct because of a lack of definition due to filtering." Thus, in the conventional device, the noise 62 and 63 are removed but the lines 61 are blurred due to the filtering.

The system of Suzuki is described in regard to the description of Fig. 14 where it is stated at column 7, lines 59-63 that "the slender lines are reproduced

as they really are when the picture images are processed with the multiple value image filtering device in the first preferred embodiments. In addition, this filtering device completely eliminates the noise found in Fig. 13." Thus, Suzuki's system is designed to eliminate noise only by filtering the dark speckled dots or noise. This being accomplished by determining a density change in specific areas of the image in order to filter out the noise without affecting the line 61.

Suzuki's teachings are contrary to the present invention. The present invention provides a smoothing filtering operation which only filters bright areas adjacent to the dark areas. Thus, the dark areas are not filtered. This creates a smoothing affect desired when viewing, for example, text while also keeping the dark areas from becoming faint.

Both claims 1 and 8 recite, *inter alia*, a detection unit for detecting bright parts of the image that are adjacent to dark parts of the image, from the image data; and a smoothing unit coupled to the detection units, for smoothing the bright parts of the image, detected by the detection unit, that are adjacent to the dark parts of the image by filtering the image data, leaving the dark parts of the image unsmooth.

Nowhere in Suzuki does it suggest or teach smoothing bright areas adjacent to dark areas while not filtering the dark areas. In fact, Suzuki teaches the exact opposite by filtering the dark speckles (noise) in order to remove them from the image. This can easily be seen by a quick glance of Figs. 13 and 14 without even reading the description within Suzuki.

In the section headed "response to the arguments", the Office Action asserts that the disclosure of "multiple value picture image data has 64 chromatic grades. The number of chromatic grades is not limited to this number" on lines 64-66 of column 7 refers to there being "no density limitation". Applicants respectfully submit, however, that this merely states that the chromatic grades of an image is not limited to 64. For example, the chromatic grades could be a 128 or 256 chromatic grades. This indicates that various other image types can be used in Suzuki's system.

Further, the Office Action alleges that the fact that Suzuki states that any lowpass filter can be used, implies that bright areas are being filtered in Suzuki's system. First, the lowpass filtering refers to the filtering of dark spots (noise) which are located in the area of small density distribution for dark image pixels. This is evidenced by Figs. 5-7. The high density areas having strong black chromatic values are allowed to pass through the lowpass filter whereas the dark spots with a higher chromatic value have a lesser density per area and are not passed through the lowpass filter. Therefore, images such as Fig. 13 can be filtered to achieve images such as Fig. 14 of Suzuki.

Second, in the lowpass filtering of Suzuki, the "lowpass" refers to the spatial frequencies that pass through the filter. Low spatial frequencies, which occur in areas in which the image data values vary gradually , get passed through the filter. High spatial frequencies, which are rapid variations in image data values, get smoothed out to more gradual variations. The filtering is the same regardless

of the brightness or the darkness of the image. If a bright area is adjacent to a dark area, with a sharp transition from dark to bright, then both the bright and dark areas are filtered so as to smooth the sharp boundary, so that dark shades more gradually into bright. If a dark area has bright noise specks, the dark area is filtered to eliminate the bright noise. Use of a lowpass filter does not imply filtering bright areas (smoothing) while leaving dark areas unfiltered (unsmoothed) as claimed by applicants.

Further, Le and Kawamura fail to make up for the deficiency of Suzuki. Kawamura teaches a device for filtering a mutli-valued image (i.e., an image with chromatic gradations or densities, as opposed to a binary image). The device includes a smoothing circuit (8b) and a selector (9) that selects either the smoothed image signal or the unsmoothed image signal as directed by a discrimination circuit (13). The discrimination circuit uses a differential filter to detect edges. The smoothing circuit employs a smoothing filter. The differential filter is a bandpass filter while the smoothing filter is a lowpass filter, as shown in Fig. 8. See column 5, lines 38-54.

The Office Action alleges that both filters belong to the smoothing circuit and cites Figs. 1-4, but the differential filter is part of the discrimination circuit 13. See column 4, lines 40 to column 5, line 15. Only the smoothing filter belongs to the smoothing circuit. See column 5, lines 18-35. Thus, Kawamura does teach or suggest a smoothing unit that uses at least two filters, as recited in claims 21-26.

Therefore, applicants respectfully submit that Suzuki in combination with Le or Kawamura fail to teach each and every feature of the claimed invention. Accordingly, reconsideration and withdrawal of the rejection are respectfully traversed.

Conclusion

For at least these reasons, it is respectfully submitted that claims 1, 2, 4-11 and 21-26 are distinguishable over the cited references. Favorable consideration and prompt allowance are earnestly solicited.

Should there be any outstanding matters that need to be resolved in the present application, the Examiner is respectfully requested to contact Chad J. Billings (Reg. No. 48,917) at the telephone number of the undersigned below, to conduct an interview in an effort to expedite prosecution in connection with the present application.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37 C.F.R. §§ 1.16 or 1.17; particularly, extension of time fees.

Respectfully submitted,

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